CLAIMS

1. A method for measuring a contour variation of a measuring area on an object, comprising the steps of:

- irradiating the measuring area with a light beam, while reflection or transmission of the beam occurs;
- splitting the transmitted or reflected beam;
- varying the phase of the split beams relative to each other, such that the differential phase is kept within the range of 2 pi;
- combining the split beams with each other and observing a fringe pattern which represents a differential phase between the split beams;
- calculating an optical path length difference from the differential phase; and
- relating the optical path length difference to the contour variation of the object.

2. A method according to claim 1, characterized in that the phase of the split beams is varied by carrying out a relative movement of the beam and the measuring area such that the form of the measuring area changes.

3. A method according to claim 1 or 2, characterized in that the form of the measuring area changes under the influence of a material-adding or material-removing operation.

4. A method according to at least one of the preceding claims, characterized in that the method is repeatedly used for measuring phase changes greater than 2 pi.

5. A method according to at least one of the preceding claims, characterized in that the phase is varied by placing an optical phase filter in one of the split beams for generating a predetermined phase plane.

6. A method according to claim 5, characterized in that the phase filter is a pin hole the size of the diffraction spot, so that the phase plane is a zero front.

7. A method according to at least one of the preceding claims, characterized in that the beam has a diameter such that at least two positions, varying in height in a measuring area are exposed; which method comprises the steps of:

- shifting the measuring beam relative to itself along the connecting line between said positions so that a differential phase between the shifted beams lies within a range of 2 pi; and
- calculating, by integrating the differential phase, an optical path length difference related to the contour variation of the object.

8. A method according to claim 7, characterized in that the method comprises the step of displacing a split beam by means of a rotating mirror; projecting the split beams on a lens, which beams, as a result of the displacement, run at an angle relative to each other; and observing, in a focal plane of the lens, a fringe pattern resulting from a shift of the beams which corresponds to the angular displacement of the rotating mirror.

9. A method according to claim 8, characterized in that the degree of shearing is determined by the slope of the contour variation.

10. A method according to at least one of the preceding claims, characterized in that the measuring beam is a parallel light beam of a

relatively small diameter, wherein the measuring area possesses a dimension smaller than the diameter of the measuring beam.

11. A method according to at least one of the preceding claims, characterized in that the reflected measuring beam is a diffuse light beam.

12. A method according to claim 11, characterized in that the measuring beam is a homogeneous, parallel light beam, wherein the measuring surface is provided with a mat layer, such that the reflected beam is a diffuse light beam.

13. A method according to claim 11, characterized in that the measuring beam is reflected on a smooth surface, wherein the measuring beam is a diffuse light beam.

14. An apparatus for measuring a contour variation of a measuring area on an object, comprising:

- a light source for providing a light beam for irradiating a measuring area;
- a holder for positioning the object relative to the light source;
- a beam-splitting member for splitting the transmitted or reflected beam;
- a phase-influencing member for setting a phase difference between the split beams;
- a beam-combining member for combining the split beams;
- an observation member for observing a fringe pattern representing a differential phase between the split beams; and
- a processor for calculating an optical path length difference from the differential phase and for relating the optical path length difference to the contour variation of the object.

15. An apparatus according to claim 14, characterized in that the holder is adapted for carrying out a relative movement of the beam and the object.

16. An apparatus according to claim 14 or 15, characterized in that the apparatus is provided with means for changing the form of the object by a material-adding or material-removing operation.

17. An apparatus according to at least one of claims 13-16, wherein the phase-influencing member comprises an optical phase filter for generating a predetermined phase plane.

18. An apparatus according to claim 17, characterized in that the phase filter is a pin hole, so that the phase plane is a zero front.

19. An apparatus according to at least one of the preceding claims, characterized in that the beam possesses such a diameter that at least two positions varying in height in a measuring area are exposed; wherein the phase-influencing member comprises means for shifting the measuring beam relative to itself in an adjustable manner along the connecting line between said positions.

20. An apparatus according to at least one of the preceding claims, characterized in that the phase-influencing member comprises a rotating mirror for displacing the split beam at an angle, wherein the beam-combining member combines the split beams and projects them, mutually running at an angle, on a lens, wherein the observation member is arranged in a focal plane of the lens, so that a fringe pattern is observed resulting from a shifting of the beams corresponding to the angular displacement of the rotating mirror.

21. An apparatus according to at least one of the preceding claims, characterized in that the measuring beam is a parallel light beam of a relatively small diameter, wherein the measuring area possesses a dimension smaller than the diameter of the measuring beam.

22. An apparatus according to at least one of the preceding claims, characterized in that the reflected measuring beam is a diffuse light beam.

23. An apparatus according to at least one of the preceding claims, characterized in that the measuring beam is a homogeneous, parallel light beam, wherein the measuring surface is provided with a mat layer, such that the reflected beam is a diffuse light beam.

24. An apparatus according to at least one of the preceding claims, characterized in that the measuring beam is reflected on a smooth surface, wherein the measuring beam is a diffuse light beam.